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Mr. John Plummer
Office of Federal Agency Programs
U.S. Department of Labor
Washington, DC 20210

Dear Mr. Plummer:

The 1998 Annual Report of NASA's Occupational Safety and Health Program is enclosed. This report follows the guidelines as established in the Charles N. Jeffress memorandum dated November 20, 1998, and covers the mishap performance statistics as well as specific accomplishments in the safety and health program areas.

Questions concerning NASA's Safety and Health Program should be directed to Ms. Catherine M. Angotti, Executive Secretary of the NASA Occupational Health and Safety Executive Board, at (202) 358-1794, or Mr. James D. Lloyd, Director, Safety and Risk Management, at (202) 358-0557.

Sincerely,

Arnauld E. Nicogossian, M.D.
Designated Agency Safety and Health Official

Enclosure

ANNUAL OCCUPATIONAL SAFETY AND HEALTH REPORT

OF THE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Reporting Period: 1998

Arnauld E. Nicogossian, M.D.
Designated Agency Safety and Health Official

James D. Lloyd, P.E.
Director of Safety and Risk Management

Enclosure

FISCAL YEAR 1998 ANNUAL REPORT ON OCCUPATIONAL SAFETY AND HEALTH

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SECTION 1 - SAFETY AND HEALTH PROGRAM PERFORMANCE

PART A – LOST-TIME INJURY AND ILLNESS RATES AND COSTS

A. INJURY AND ILLNESS

NASA continues to achieve one of the lowest injury/illness rates in the Federal sector. A comparison of NASA to other large Federal agency safety performance data indicates that NASA consistently rates in the top three with respect to lost-time injury rate performance. Specific NASA performance metrics for FY 98 are included in Attachment 1.

As with most Federal government agencies, NASA has been reduced in size and changed in structure. In spite of these changes and the loss of experienced personnel, NASA's lost-time-frequency rate has remained low. The lost-time injury/illness rate for FY 98 was 0.286 lost-time cases per 200,000 hours of employee work exposure.

The trend for NASA workers' compensation cost has also been stable. For the past 4 years those costs have been as follows: FY 95 - $7.3M, FY 96 - $6.8M, FY 97 - $7.1M and FY 98 - $7.3M. During FY 98 NASA experienced one automotive accident which resulted in over $600,000 worth of medical costs which significantly biased the OWCP total for the past year (typical Agency average claim costs are less than $500 per claim). Without that one incident, the OWCP costs for FY 98 would have shown an improvement over FY 97 of approximately 10%.

Significant efforts to improve compensation case tracking and case management continued into FY 98. These efforts included utilizing the Veterans Administration Workers' Compensation Data Management System and the Department of Labor Agency Query System to provide real-time OWCP claims status to NASA claims managers, training all workers' compensation specialists throughout the Agency and focusing special case management attention on NASA Centers with the highest workers' compensation costs. Those efforts, along with an in-depth review of long term disability claims and increased provision of restricted duty work to NASA employees have begun to reap nearly a 25% reduction in OWCP claims for the first quarter of FY 99 over the same period in FY 98.

A.1. What are the major causes of injuries and illnesses at your Agency?

The top five causes of injuries and illnesses at NASA are attributable to the following:

1. Slips, trips, and falls	42%
2. Lifting and moving operations	31%
3. Bumped into/struck by	21%
4. Repetitive motion	2%
5. Other classifications	4%

A.2. What action has the Agency taken to correct these hazards or remove employees from risk?

Each NASA Center maintains a dedicated Safety and Health Program Office responsible for supporting Center line Management with their safety responsibilities. Those offices conduct independent reviews of Center operations to assure compliance with all elements of 29 CFR Part 1960. Each Center's process for inspection and abatement is also reviewed during program reviews conducted by NASA Headquarters. This inspection process, aimed at identifying both unsafe conditions and unsafe acts is the primary means for addressing the first three types of injuries listed above.

Early involvement of the safety and health staffs in design and procurement activities, is also a key risk management focus area at each NASA site. That early involvement in hazard assessment of operations enables identification of potential safety and health hazards at the earliest possible stage. Center safety and health professionals serve in a review and approval capacity for purchase of hazardous materials, hazardous equipment, personal protective equipment, and other key purchases which are key to controlling hazards.

Special emphasis has been placed on the repetitive stress injury category and NASA has employed the Midwest Center for Occupational Health to provide the OSHA Course 225 to the NASA Centers. This comprehensive 3-day course has served to augment the existing ergonomics programs at each site and facilitates repetitive stress hazard analysis and elimination or reduction of the hazard prior to the onset of injuries. The NASA Centers utilize ergonomics assessment teams including representatives from industrial hygiene, safety, medical, fitness facility, and line management organizations to help identify potential cumulative trauma and repetitive stress injury potential and to recommend job and equipment modifications.

Each NASA Center manages a process for employee reporting of unsafe conditions. To augment those local and very effective avenues of reporting hazards, NASA also operates an independent and anonymous NASA Safety Reporting System (NSRS) for the benefit of any employee wishing to remain anonymous.

A.3. What action has been taken to address the causes of these hazards?

Analysis of the cause of mishaps within NASA is accomplished via the mishap reporting and investigation process. NASA has promulgated specific investigation policies which require thorough analysis ranging from the supervisors report of injury listing recommendations to prevent reoccurrence, to full mishap investigation boards for the incidents with actual or potential for serious injury or great property damage. Those investigation efforts, coupled with the inspection and assessment activities mentioned above,

constitute the Agency's primary approach to addressing the causes of injuries. Associated training efforts are listed under Section C below.

A.4. Does your Agency use injury and illness data to set program priorities and objectives?
Yes, injury and illness data represent one of the primary metrics used by NASA to set program priorities. While the safety performance of each NASA Center continues to represent "best in class" within the Federal sector, the NASA Administrator has set an objective for achieving "world class safety" as one of his key goals. Specific initiatives to achieve that goal are listed below under Section II.

A.5. Does your Agency use injury and illness data to evaluate the performance of top managers?

In general, the lost-time injury and illness rates serve as one of the top management evaluation metrics. NASA uses the standard metrics for evaluation of its Centers including lost-time injury and illness rates, frequency of major mishaps, workers' compensation rates for each location, etc. Each year safety performance goals are established for each Center. Center performance against those goals as well as Center-to-Center comparisons are rolled up into an annual report given to NASA Senior Management and to the NASA Occupational Health and Safety Executive Board.

However, as referenced above, injury/illness rates have historically been very low and do not, in and of themselves, suffice as a proactive measure of safety performance. NASA is developing a revised senior management performance review process which extends beyond the injury and illness statistics and which better represents the risk management requirements for Agency, program, and project management. The new system is geared more to the maintenance of a safety and health program which meets core safety and health program requirements as defined by OSHA:

Management commitment and employee involvement
Work-site hazard analysis
Hazard prevention and controls
Safety and health training

This year each NASA Center Director was asked to evaluate their safety and health programs against these core elements at the end of the fiscal year and report their status to the NASA Administrator. Action plans were requested for any area not meeting the core requirements. More detail on this initiative is covered in Section II.

PART B - WRITTEN SAFETY AND HEALTH PROGRAM

B.1. Does your Agency have an up-to-date written safety and health program? When was it last updated?

Yes, NASA has conducted an extensive safety and health policy updating process over the past 3 years. The Safety Policies and Requirements Document and the Safety and Health Handbook, the last two of the set of safety and health policy and procedure documents, are in the NASA document review cycle. While these documents are deemed to be current with respect to meeting OSHA requirements, extensive effort has been completed to revise both documents to reflect the experience gained from their implementation over the past few years and to place added emphasis on areas of key concern to NASA. Final reviews of

both those documents are currently being conducted through the NASA on-line directives information system. Review copies will be forwarded to the OSHA Office of Federal Agency Programs. Upon final acceptance, the NASA Administrator will sign them; this will further signify the level of commitment given by NASA management.

B.2. Do your Department's subagencies have separate written safety and health programs specific to their operations? If so, how does your departmental program relate to the subagencies' programs?

Yes, each NASA Center maintains safety and health program policies, procedures, and guidelines. Those documents help to describe specific local implementation requirements for the Agency policy. For example, the Center documentation might provide specific contact information, forms and permits, emergency procedures, etc. to support the program. Each Center's local policies are included in the program review process conducted by NASA Headquarters safety and health organizations to ensure consistency and comprehensiveness.

B.3. Have Agency managers, supervisors, employees and employee representatives been provided training to familiarize them with the written safety and health program?

Yes, NASA personnel are trained through the NASA Safety Training Center, our on-line computer based training program, local orientations, and special local training to meet the requirements of 29 CFR 1960. The extent to which Agency and NASA Center policies are communicated to the entire NASA workforce is evaluated during safety and health program self-assessments, functional management reviews, process verifications, and the site visits from NASA Headquarters. Those reviews indicate that the reemphasis being placed on communication of NASA policy is appropriate.

PART C - SAFETY AND HEALTH PROGRAM TRAINING

C.1. How does your Agency ensure that managers, supervisors, employees and employee representatives have been trained in the requirements of the safety program?

Each NASA Center is reviewed on its performance in the safety and health-training arena. These reviews include both an annual self-assessment in which the Center reviews its internal training programs for compliance with OSHA requirements and a NASA Headquarters review of the Center training programs.

In addition, this past year the NASA Administrator asked each NASA Center Director to conduct a special assessment to ensure:

> That all employees can identify and understand the hazards to which they may be exposed and how to prevent harm to themselves and others from exposure to those hazards.
>
> That supervisors understand their responsibilities relating to:
> - analyzing the work under their supervision to identify unrecognized potential hazards
> - maintaining and assuring the proper utilization of the physical OSH protection devices and controls used in their work areas

- reinforcing employee awareness of the nature of potential hazards in their work and on the needed protective measures.

That managers understand their safety and health responsibilities under another core requirement area titled "management commitment and employee involvement."

C.2. How does your Agency train managers, supervisors, employees, and employee representatives to recognize the hazards of their work operations?

This requirement is addressed through a multifaceted approach utilizing the following:

On-site Instructor Based Courses - The local safety and health professionals at each Center present courses to on-site personnel covering the broad range of topics required by OSHA (such as confined space entry, lock-out/tag-out, bloodborne pathogens, hearing protection, respiratory protection, etc.).

NASA Safety Training Center Courses - Each year NASA invests approximately $1,000,000 through this training activity located at Johnson Space Center for research, course development and deployment to the NASA Centers. Over 5,500 personnel have attended instructor-based safety training presented by the NASA Safety Training Center (NSTC) in FY 98. The NSTC has a course catalogue that identifies 50 safety and health courses that can be given Agencywide. Students for these no-cost courses are representatives of NASA, collocated Department of Defense, Department of Labor, and various other Federal agency participants.

Web-based Training - NASA Safety and Mission Assurance (SMA) has established web based training for all Agency and support contractor managers, program directors, and employees. In excess of 2,000 NASA and contractor personnel are enrolled in over 110 hours of web-based safety and mission assurance training. Over the past year we added three health modules to the web-based training library covering laser safety, bloodborne pathogens, and hearing conservation.

Special Training Contracts - Each year NASA identifies specific courses needed Agencywide and contracts for that training. For example, this past year NASA provided ergonomics training via the NIOSH Regional Training Centers, ventilation design and troubleshooting training, indoor air quality training and refresher training on toxicology to personnel from all NASA Centers.

Training Programs Developed by Other Federal Agencies- This year the entire EPA training library of safety health and environmental topics was distributed to each NASA Center for their use locally.

C.3. What training has your Agency done to help managers develop hazard abatement plans when abatement cannot be achieved within 30 workdays.

This situation is generally approached on a case-by-case basis at the local or Center level. Each safety deficiency identified during an inspection or identified by an employee is assigned an abatement date. If the engineering or procurement issues suggest that abatement will exceed 30 days, the local safety engineer will assist the departmental supervisor in documenting the abatement plan and assure that interim controls are adequate to prevent injury.

NASA's policy for abatement of unsafe or unhealthy conditions is described in NASA Handbook 2710.1 (Safety and Health Handbook Occupational Safety and Health Programs). In response to reports of

suspected unsafe or unhealthy conditions, installation safety and health officials conduct inspections as soon as possible but no later than indicated by severity of the hazard as follows:

A. For imminent danger conditions (Risk Assessment Code 1) 24 hours
B. For serious conditions (Risk Assessment Code 2) 3 working days
C. For less than serious conditions (Risk Assessment Codes 3-6) 20 working days.

Each NASA site manages a process for tracking of safety and health hazards through abatement. Some sites have automated their tracking systems whereas other locations manage the process through a standard log-tracking system. Review of the abatement assurance process is a standard element of the NASA functional management spot checks and process Reviews.

SECTION II - ACCOMPLISHMENTS

Please describe the major success story of occupational safety and health in your Agency during the reporting period.

The major success story for the occupational safety and health program within NASA is the Agency's sustained superior performance in managing a safe operation in an incredibly broad scope of occupational hazards coupled with the Agency's continuous improvement efforts in the safety and health area, especially under scheduled operational conditions of space. NASA initiated planning and implementation of a more vigorous safety program at all sites to enhance even further the theme of line management accountability for safety and health. This was modeled after the program philosophy of a corporation with a recognized world class program and a reaffirmation of and rededication to NASA's own safety and health policy. The NASA Agency Safety Initiative (ASI) began in FY 98 with the goal of moving NASA from the best Federal agency safety program to a "World Class" safety program. The ASI is focused on the four core process requirements (CPR) which are similar to the voluntary protection program and requirements of 29 CFR 1960 as listed below.

CPR 1 Management Commitment and Employee Involvement
(i) Work site Policy Documentation
(ii) Clear Goal Established and Communicated
(iii) Full Management Involvement in Implementation
(iv) Full Employee Involvement in the Safety and Health Program
(v) Assigned/Communicated Responsibilities
(vi) Authority and Resources Provided
(vii) Professional Safety and Health Staff
(viii) Center Staff Held Accountable
(ix) Annual Reviews Conducted

CPR 2 System and Work site Hazard Analysis
(i) Baseline Surveys Completed and Updated
(ii) Analysis Performed for New Work
(iii) Hazard Analyses Performed for All Jobs
(iv) Safety and Health Inspections Occur Regularly
(v) Hazard Reporting System in Place
(vi) All Mishap/Close Calls Investigated and Hazards Corrected
(vii) All Injury, Illness, and Close Call Trend Data Analyzed

CPR 3 Hazard Prevention and Control
(i) Hazard Identification Process and Measurements Established
(ii) Facility and Equipment Maintenance Conducted
(iii) Emergency Preparedness Planning and Training Conducted
(iv) Emergency Medical Care Program Established

CPR 4 Safety and Health Training
(i) Employees Trained to Identify, Understand, and Prevent Hazards
(ii) Supervisors Trained to Control Hazards
(iii) Managers Trained to Understand Safety and Health Issues

Examples of the specific actions being taken as a result of that initiative include of the following actions:

Policy letter from the Administrator to every NASA employee and contractor stating the intent for NASA to become a world class safety program.

Insertion of the concept of safety as a core value and other specific safety requirements into the NASA Strategic Plan.

Development of specific safety and health performance criteria for NASA managers clearly defining the level of management commitment required.

Aggressive utilization of senior management boards such as the Occupational Health and Safety Board to share the state of programmatic and institutional efforts and achievements with respect to safety and health.

Further development of Agency safety and health metrics.

Extensive expansion of an Agency safety and health award system.

Procurement strategy development to assure appropriate safety requirements in all NASA procurement actions.

Senior Agency managers training program conducted by NASA Associate Administrators.

In addition to the ASI effort, several key safety and health program accomplishments occurred over the past year including:

OSHA Voluntary Protection Program (VPP) STAR certification of Langley Research Center (the first Federal facility to achieve VPP STAR status). A second NASA organization has submitted its application.

Successful implementation of the new OSHA respiratory protection standard was achieved.

As a part of safety culture change at NASA, four NASA Centers have adapted extensive DuPont Safety Training programs to advance the concept of line management's accountability for safety as well as

safety awareness at the highest levels of management. This approach is expected to yield further reductions in mishaps throughout the Agency in FY 99.
NASA has fielded an automated mishap reporting system called the Incident Reporting Information System (IRIS) to report and track mishaps, close calls, and corrective actions as well as injury/illness mishap statistics from each of our NASA Centers. Information used from this system is used to develop mishap prevention programs for both Federal and contractor employees.

In an effort to assess the Agency safety and health program, a performance evaluation profile (PEP) has been developed as an anonymous analysis tool for assessing the employees perspective of safety and health programs and comparing it with management's assessment of the program. This automated format has been completed at one major NASA Center yielding points of focus for enhancing the Center safety and health program. The NASA Administrator has directed the entire Agency to use this tool in FY 99, as a part of the Agency Safety Initiative. The use of the program has been instrumental in the self-evaluation of NASA for participation in the voluntary protection program.

For the past 4 years NASA has sponsored a "safety awareness day" at all NASA Centers. The day (or week in some cases) has been set aside for supervisors and employees to dwell exclusively on safety training or other safety and health topics concerning the workplace, operations, and human space flight.

An awareness campaign for the confidential NASA Safety Reporting System (NSRS) has been conducted to ensure the reporting process has been directly advertised to every NASA civil service employee and the leading NASA contractors.

Close call reporting has been reemphasized in new NASA policy. The Agency deems close call programs as critical for proper trend analysis, proactive mishap prevention and assessing the work environment for the existence of accident potential. The reporting of close calls by all NASA civil service employees and contractor personnel is considered mandatory.

NASA Mishap Reporting and Investigating Procedures and Guidelines have been enhanced to provide for increased emphasis and analysis of root causes in all mishaps and close calls. An automated computer based training module has been developed to assist employees in the reporting of mishaps.

Safety information availability was also enhanced through development of safety and health web sites. NASA employees now have even better access to current regulatory requirements, NASA policy documents covering safety and health programs, training materials, and priority mishap prevention topics.

NASA continued Federal interagency agreements for support of NASA programs including the Veterans Administration (workers' compensation tracking system), Food and Drug Administration (safety surveys of diagnostic x-ray equipment), GSA (development of web based training programs), etc. Use of subject matter experts from other Federal agencies has proven to be both helpful and cost effective.

To enhance safe and healthful workplace awareness for employees, NASA Emergency Coordinators were trained in "Managing the Consequences of Terrorism" by national level experts in an extensive 5-day program. The annual meeting and training session of the NASA emergency preparedness Coordinators accomplished cross talk and concurrence on new "NASA Emergency Preparedness Procedures and Guidelines" for meeting threats of the new millennium. Additionally, NASA Fire

Protection coordinators met to rewrite the NASA Safety Standard for Fire Protection and to share information concerning technical fire safety issues for the Agency in FY 98.